

## Abstract

The invention provides a system and method for controlling a source of liquid metal ions, the source comprises a tip a first electrode and a second electrode, the method includes the steps of: (i) maintaining the first electrode at a first voltage level range and maintaining the second voltage at a second voltage range, such as to extract metal ions formed on a tip of the source, during an active mode of operation of the source; and (ii) maintaining the first electrode at a third voltage level range and maintaining the second voltage at a fourth voltage level range, such as to substantially reduce an extraction of metal ions from the tip, during an idle mode of operation of the source. The third voltage level range and, alternatively or additionally, the fourth voltage level ranges does not include zero voltage level. The first voltage level range differs than the third voltage level range.